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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/883,795 | 06/18/2001 | Leonard Forbes | 303.355US4 | 3129 |

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| EXAMINER | |
|---|---|
| DOAN, THERESA T | |
| ART UNIT | PAPER NUMBER |
| 2814 | |

DATE MAILED: 06/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/883,795 | Applicant(s) FORBES ET AL. | |
|---|---|---|---|
| | Examiner Theresa T Doan | Art Unit 2814 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 April 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *24-26 and 30-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *24-26 and 30-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1☐ Certified copies of the priority documents have been received

2☐ Certified copies of the priority documents have been received in Application No. _____ .

3☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
4)☐ Interview Summary (PTO-413) Paper No(s) _____
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 24, 30, 32-33, 37-38, 42-43, 47-48, 52-53 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori (5,604,357) as previously cited.

Hori teaches in figure 7(e) a method of forming a floating gate transistor comprising:

forming a source region 2 and a drain region 3 in a silicon substrate 1;

forming a gate insulator 15 comprising silicon dioxide on a channel region in the substrate between the source region and the drain region (column 25, line 34); and

forming a floating gate 11a comprising a floating gate material selected from the group consisting of gallium nitride (GaN) and gallium aluminum nitride (GaAlN), such that the floating gate is isolated from conductors and semiconductors (column 25, lines 19-21):

forming a silicon dioxide intergate insulator 13a on the floating gate (column 25. line 33): and

forming a control gate 11b on the intergate insulator.

Although Hori does not explicitly show a floating gate and a control gate, "the floating gate and the control gate" are a label that does not structurally distinguish over "storage region" in Hori's device. Hori teaches "storage region" layer functions as "a floating gate and a control gate". Labels, statements of intended use, or functional language do not structurally distinguish claims over prior art, which can function in the same manner, be labeled in the same manner, or be used in the same manner. See In re Pearson, Ex parte Minks, and In re Swinehart.

3. Claims 25-26, 31, 34-36, 39-41, 44-46, 49-51, 54-56 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori (5,604,357) as applied to claims 24, 32, 37, 42, 47, 52 and 57 above, in view of Major et al. (6,130,147).

Hori teaches substantially the entire claimed structure except for forming the floating gate by growing gallium nitride (GaN) in a horizontal reactor from an ammonia ($NH_3$) source gases that using a method of metal organic chemical vapor deposition (MOCVD) and further comprises forming the floating gate by plasma-enhanced molecular beam epitaxy (PEMBE).

Major et al. teach growing gallium nitride (GaN) in a horizontal reactor from an ammonia ($NH_3$) source gases that using a method of metal organic chemical vapor deposition (MOCVD) and further comprises forming layer by plasma-enhanced molecular beam epitaxy (PEMBE) (column 5, lines 1-10).

Given the above teaching, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the Hori structure using the method of Major in order to operate the device in its intended use.

***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 24-26 and 30-61 are rejected under the judicially created doctrine of double patenting over claim 22 of U. S. Patent No. 6,031,263 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: both U.S. Patent and instant application claim a DEAPROM and transistor with gallium nitride or gallium aluminum nitride gate comprising a gate insulator. Moreover, the claim 22 in the U.S. No. 6,031,263 is either broader version of the claims of the instant application or are obvious variations thereof.

For example, claim 22 in U.S. No. 6,031,263 "... a gate insulator from the gate insulator material" whereas claim 24 in the instant application claims "... a gate insulator comprising silicon dioxide on a channel region in the substrate between the source region and the drain region." Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one having ordinary skill in the art to make a gate insulator of U.S. Patent No. 6,031,263 with silicon dioxide because silicon dioxide is a well-known material in the semiconductor industry to be used for insulating purpose.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Response to Arguments***

Applicant's arguments filed April 3, 2002 have been fully considered but they are not persuasive.

Applicant argues, using Figure 15(a), that Hori does not show or suggest forming a gate insulator comprising silicon dioxide on a substrate, and forming a floating gate on the gate insulator, the floating gate comprising GaN or GaAlN. However, Hori discloses in Figure 7(e) the materials of gate insulating ($SiO_2$) and floating gate (GaN or GaAlN) (see column 25, lines 18-25).

The rest of applicant's arguments, addressed to the amended claims are considered in the rejections shown above.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T Doan whose telephone number is (703) 305-2366. The examiner can normally be reached on 8:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, OLIK CHAUDHURI can be reached on (703) 308-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TD
June 7, 2002